User Guide

PowerCage Products

PowerCage™ MTP AV Series

MTP Twisted Pair Transmitter and Receiver Modular Boards

Extron® Electronics
INTERFACING, SWITCHING AND CONTROL

68-1643-01 Rev. A
08 10

Safety Instructions • English

This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

Caution

Read Instructions • Read and understand all safety and operating instructions before using the equipment.

Retain Instructions • The safety instructions should be kept for future reference.

Follow Warnings • Follow all warnings and instructions marked on the equipment or in the user information.

Avoid Attachments • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

Warning

Power sources • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Lithium battery • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Consignes de Sécurité • Français

Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).

Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

Attention

Lire les instructions• Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

Conserver les instructions• Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

Respecter les avertissements • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

Eviter les pièces de fixation • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

Avertissement

Alimentations • Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.

Déconnexion de l'alimentation• Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

Protection du cordon d'alimentation • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

Réparation-maintenance • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

Fentes et orifices • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

Lithium Batterie • Il a danger d'explosion s'll y a remplacment incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un ype equivalent recommande par le constructeur. Mettre au reut les batteries usagees conformement aux instructions du fabricant.

Sicherheitsanleitungen • Deutsch

Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

Achtung

Lesen der Anleitungen • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits-und Bedienungsanleitungen genau durchlesen und verstehen.

Aufbewahren der Anleitungen • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

Befolgen der Warnhinweise • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

Keine Zusatzgeräte • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdanschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stomversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

Schutz des Netzkabels • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dagegengestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

Schlitze und Öffnungen • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

Litium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

Instrucciones de seguridad • Español

Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.

Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

Precaucion

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean especificamente recomendados por el fabricante, ya que podrian implicar riesgos.

Advertencia

Alimentación eléctrica • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearia ni eliminaria.

Desconexión de alimentación eléctrica • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

Protección del cables de alimentación • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

Reparaciones/mantenimiento • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

Ranuras y aberturas • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalientamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

Batería de litio • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

安全须知 • 中文

这个符号提示用户该设备用户手册中有重要的操作和维护说明。

这个符号警告用户该设备机壳内有暴露的危险电压，有触电危险。

注意

阅读说明书 • 用户使用该设备前必须阅读并理解所有安全和使用说明。

保存说明书 • 用户应保存安全说明书以备将来使用。

遵守警告 • 用户应遵守产品和用户指南上的所有安全和操作说明。

避免追加 • 不要使用该产品厂商没有推荐的工具或追加设备，以避免危险。

警告

电源 • 该设备只能使用产品上标明的电源。 设备必须使用有地线的供电系统供电。 第三条线（地线）是安全设施，不能不用或跳过 。

拔掉电源 • 为安全地从设备拔掉电源，请拔掉所有设备后或桌面电源的电源线，或任何接到市电系统的电源线。

电源线保护 • 妥善布线， 避免被踩踏，或重物挤压。

维护 • 所有维修必须由认证的维修人员进行。 设备内部没有用户可以更换的零件。为避免出现触电危险不要自己试图打开设备盖子维修该设备。

通风孔 • 有些设备机壳上有通风槽或孔，它们是用来防止机内敏感元件过热。 不要用任何东西挡住通风孔。

锂电池 • 不正确的更换电池会有爆炸的危险。必须使用与厂家推荐的相同或相近型号的电池。按照生产厂的建议处理废弃电池。

FCC Class A Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

The Class A limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense

Symbol Convention

The following symbols are used throughout the guide and carry the following meanings:

TIP: A Tip provides a suggestion to make setting up or working with the device easier.

NOTE: A Note draws attention to important information.

CAUTION: A Caution warns of things or actions that might damage the equipment.

WARNING: A Warning warns of things or actions that might cause injury, death, or other severe consequences.

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Introduction

- About this Guide
- About the PowerCage MTP AV Transmitters and Receivers
- Features

About this Guide

This guide contains information about the following Extron® PowerCage™ MTP AV modular board-designed twisted pair transmitters and receivers that are compatible with the PowerCage Modular Power Enclosure:

- **PowerCage MTP T AV transmitter**
- **PowerCage MTP R AV receiver**

This guide includes instructions for an experienced installer to install, configure, and operate the equipment.

NOTE: In this guide, the term "PowerCage MTP AV" refers to both MTP T AV transmitter and MTP R AV receiver boards. Where differences exist between the two boards, the full name of the board is used in the description.

About the PowerCage MTP AV Transmitters and Receivers

The Extron PowerCage MTP AV transmitters and receivers are modular board-designed MTP Twisted Pair boards that are exclusively for use in Extron PowerCage 1600 enclosure. They can be used with any CAT 5, 5e, or 6 cable or with Extron Enhanced Skew-Free™ A/V UTP cable for cable runs of 1,000 feet (300 meters) or more

The PowerCage MTP AV transmitters and receivers must be installed in an Extron PowerCage enclosure.

NOTE: To mount and install an Extron PowerCage, refer to the documents supplied with the unit, or to the PowerCage User Guide, available at **www.extron.com**.

The PowerCage MTP AV transmitters and receivers boards are as follows:

- **PowerCage MTP T AV transmitter —** Supports composite video or S-video on BNC connectors, and audio on a 5-pole captive screw connector. The output to a compatible MTP receiver is made over CAT 5, 5e, or 6-type cabling via the RJ-45 connector.
- **PowerCage MTP R AV receiver —** The input is made over CAT 5-type cabling via the RJ-45 connector. The output is composite video or S-video and summed mono audio on BNCs and a 5-pole captive screw connector.

Features

- **PowerCage MTP T AV** transmits composite video or S-video along with summed mono audio signals 1,000 feet (300 meters) or more over a single CAT 5, 5e, 6, or Extron Enhanced Skew-Free™ UTP cable.
- Compatible with NTSC, PAL, and SECAM
- Modular, field-upgradeable, and hot-swappable boards are designed for the PowerCage 1600 enclosure. The compact design of the enclosure accommodates up to 16 single-slot or 8 double-slot boards, eliminates the need for individual power supplies for each transmitter and receiver, and provides forced-air cooling for each module.
- Hot-swappable components allow the user to replace boards or install additional transmitter and receiver boards any time for quick and easy upgradeability or expansion without the need to power down the system. . This is especially useful for mission-critical applications that require continuous system operation.
- LED power indicator.
- Compatible with MTP Series video receivers, and MTP Series switchers, matrix switchers, and distribution amplifiers.
- **PowerCage MTP R AV** receives composite video or S-video along with summed mono audio signals 1,000 feet (300 meters) or more over a single CAT 5, 5e, 6, or Extron Enhanced Skew-Free™ UTP cable.
- Sharpness and gain controls for optimizing signal and image quality

Installation and Operation

This section describes the installation and operation of the PowerCage MTP T AV and MTP R AV, including:

- **Installing the Boards into the PowerCage Enclosure**
- **Connections, LEDs, and Encoders**
- **PowerCage Front Panel Port, Control, and Indicators**
- **Operation**

Installing the Boards into the PowerCage Enclosure

Up to 16 single slot or 8 dual slot input/output boards can be inserted into the PowerCage enclosure. All PowerCage MTP AV transmitters and receivers are all single slot boards.

NOTES: The boards are hot-swappable; they can be installed or removed without turning off or disconnecting the power to the PowerCage enclosure.

Use ESD precautions when installing a board to avoid damaging the board. Keep the board in the anti-static bag until needed. Use proper grounding techniques during installation.

1. Where applicable, remove as many blank plates or previously installed boards from the rear of the PowerCage as necessary for the number of new boards to be installed.
2. Hold the board with the signal connectors towards you and the LED at the top, and align the top and bottom grooves of the board with the slide posts in the selected enclosure slot. See the example in figure 1.

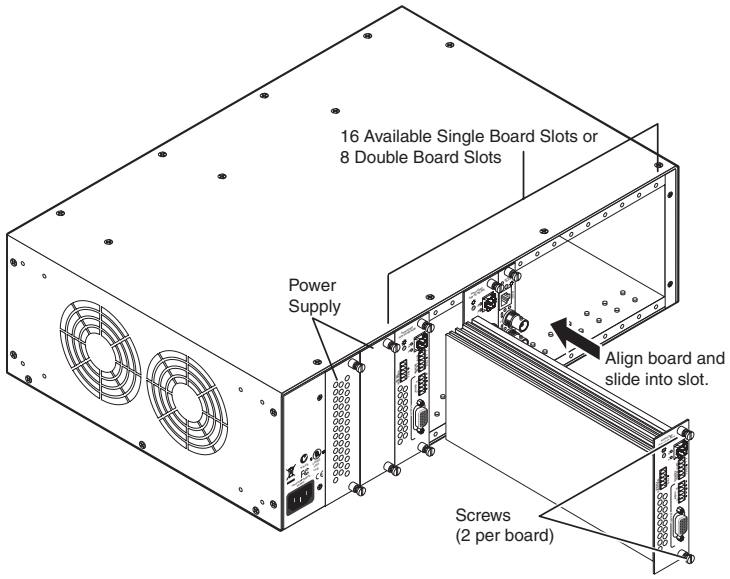


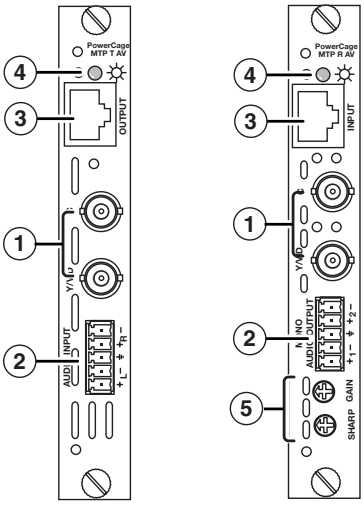
Figure 1. Inserting Boards into the PowerCage Enclosure

3. Carefully slide the board into the slot, aligning that the two tabs on the lower front end of the board with the matching ports in the enclosure. Push the board firmly into place. If the PowerCage is powered on, the power LED on the board lights.
4. Tighten the screws to secure the board in place.

NOTE: Use a tool to fully tighten the screws after initial installation and subsequent removal and replacement of the boards..

5. Repeat steps **2** though **4** for all boards needing installation.

Connections, LEDs, and Encoders

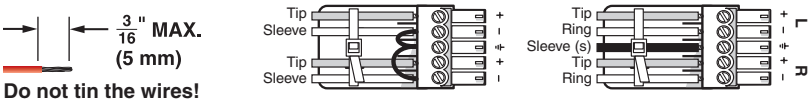


PowerCage MTP T AV **PowerCage MTP R AV**

Figure 2. PowerCage MTP AV Connectors

① **BNC connectors —**
MTP T AV board — Connect composite video (Vid) or S-video (Y-C) inputs to the BNC connectors.
MTP R AV board — Connect suitable display devices to the BNC connectors for composite video (Vid) or S-video output (Y-C).

② **Audio connector (5-pole captive screw) —**
MTP T AV board — Connect an audio input source to the 5-pole captive screw connector. Wire the captive screw connector as shown below. Use the supplied tie-wrap to secure the audio cable to the connector.

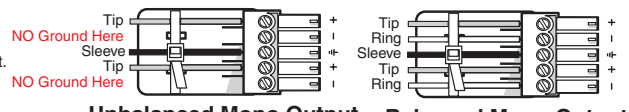


Unbalanced Stereo Input **Balanced Stereo Input**

Figure 3. Captive Screw Connector Wiring for Stereo Audio Input

MTP R AV board — Connect a suitable audio output device to the MTP R AV board for dual mono audio output. Wire the captive screw connector as shown below.

CAUTION
For unbalanced audio, connect the sleeve(s) to the ground contact. **DO NOT** connect the sleeve(s) to the negative (-) contacts.



Unbalanced Mono Output **Balanced Mono Output**

Figure 4. Captive Screw Connector Wiring for Mono Audio Output

NOTES: The length of exposed wires is critical. The ideal length is 3/16 inch (5 mm). If the stripped section of wire is longer than 3/16 inch, the exposed wires may touch, causing a short circuit. If it is shorter than 3/16 inch, wires can be easily pulled out of the captive screw connectors.

Figure 5 identifies the tip, ring, and sleeve parts of standard audio connectors. A mono audio connector consists of the tip and sleeve. A stereo audio connector consists of the tip, ring and sleeve. The tip, ring, and sleeve wires are also shown on the captive screw audio connector diagrams.

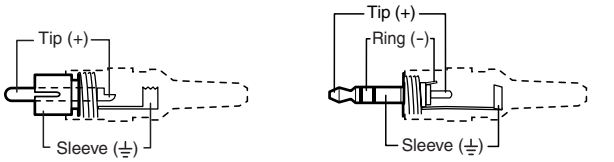
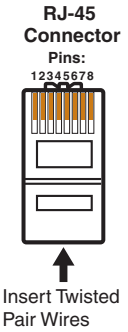


Figure 5. Typical Audio Connectors

③ **RJ-45 connector —**
MTP T AV board — Connect the transmitter to a suitable MTP receiver via this connector. Terminate the cable as shown on the right, using the same standard (A or B) at both ends
MTP R AV board — Connect the twisted pair cable from the transmitter to this input connector. Terminate the cable as shown on the right, using the same standard (A or B) at both ends



Pin	T568A Wire color	T568B Wire color
1	White-green	White-orange
2	Green	Orange
3	White-orange	White-green
4	Blue	Blue
5	White-blue	White-blue
6	Orange	Green
7	White-brown	White-brown
8	Brown	Brown

④ **Power LED —** This LED lights to indicate that power is applied to the board.

⑤ **Sharpness and Gain Adjustment (MTP R AV only) —** Image sharpness and gain can be adjusted with these two potentiometers for optimizing the image and signal quality.

View the image and adjust the either control for the best image quality.

PowerCage Front Panel Port, Control, and Indicators

For full details on the mounting, setup, and operation of the PowerCage 1600 enclosure refer to the *PowerCage 1600 Enclosure User Guide*, online at **www.extron.com**.
The following features are on the front panel of the PowerCage enclosure.

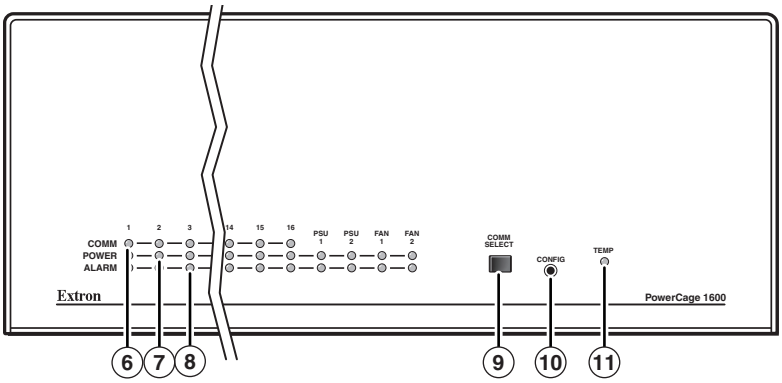


Figure 6. PowerCage Front Panel

⑥ **Comm LED (Slots 1-16) —** This LED lights to indicate that the board at this location is selected for connection to the Configuration port (item ⑩). Repeatedly press the Comm Select button (item ⑨) to select the desired slot and installed board.

> **NOTE:** The front panel Comm feature **DOES NOT** work with these MTP boards.

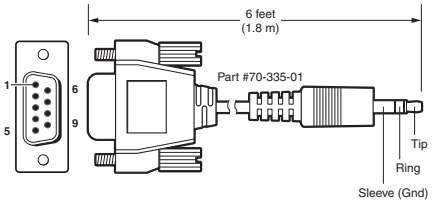
⑦ **Power LED (Slots 1-16, PSUs 1 and 2, Fans 1 and 2) —** This LED lights to indicate that power is applied to the board at any of the slots.

⑧ **Alarm LED (16 locations) —** For use with fiber optic boards only, where installed. This LED lights to indicate that light is received on the fiber optic board Rx connector at this location.

⑨ **Comm Select button —** Repeatedly press this button to select the desired board for connection to the Configuration port. The Comm LED (item ⑥) for the selected board lights.

⑩ **Configuration port —** Connect this 2.5 mm mini stereo jack with a PC for communication with installed boards (other than MTP boards). Use the optional Extron 9-pin D to 2.5 mm mini jack TRS RS-232 cable, part #**70-335-01**, for this connection.

> **NOTE:** The configuration port **DOES NOT** work with these MTP boards.



9-pin D	Connection	TRS Plug
Pin 2	Computer's RX line	Tip
Pin 3	Computer's TX line	Ring
Pin 5	Computer's signal ground	Sleeve

Figure 7. 9-pin TRS RS-232 Cable 70-335-01

This port is RS-232 only with the following protocols: 9600 baud, no parity, 8 data bits, 1 stop bit, no flow control

> **NOTE:** Configuration port protocols are not applicable for these MTP boards.

⑪ **Temp LED —** This LED lights to indicate that the temperature within the PowerCage enclosure is high (approximately 167 °F [75 °C]) and equipment damage is imminent.

Operation

After the transmitter, all receivers, and their connected devices are powered up, the system is fully operational.

If any problems are encountered, verify that the cables are routed and connected properly, and that all display devices have suitable resolutions and refresh rates.

If your problems persist, call the Extron S³ Sales & Technical Support Hotline. See the **contact numbers** on the rear of this guide for the Extron office nearest you.

Reference Information

This section provides the specifications and part numbers for the PowerCage MTP T AV and Powercage MTP R AV modular boards.

- **Specifications**
- **Part Numbers**

Specifications

NOTE: For PowerCage Enclosure specifications, refer to the *PowerCage 1600 Enclosure User Guide*, or to the PowerCage system specifications, available online at www.extron.com.

Video — PowerCage MTP T AV, PowerCage MTP R AV

Gain	Unity
Differential phase error	<1.0° at 3.58 MHz and 4.43 MHz
Differential gain error	<1.0% at 3.58 MHz and 4.43 MHz

Video input — PowerCage MTP T AV

Number/signal type	1 S-video or composite video
Connectors	2 female BNC
Nominal level	1 Vp-p for Y of S-video and for composite video, 0.3 Vp-p for C of S-video
Minimum/maximum levels	0.3 V to 1.5 Vp-p with no offset
Impedance	75 ohms
Return loss	<-30 dB, DC @ 10 MHz
DC offset (max. allowable)	250 mV

Video output — PowerCage MTP R AV

Number/signal type	1 S-video or composite video
Connectors	2 female BNC
Nominal level	1 V p-p for Y of S-video and for composite video, 0.3 V p-p for C of S-video
Minimum/maximum levels	0.3 V to 1.5 Vp-p
Impedance	75 ohms
Return loss	<-35 dB @ 5 MHz
DC offset	±20 mV with input at 0 offset

Sync — PowerCage MTP T AV, PowerCage MTP R AV

Standards	NTSC 3.58, NTSC 4.43, PAL, SECAM

Audio — PowerCage MTP T AV, PowerCage MTP R AV

Number/signal type	1 set of proprietary analog signals
Connector	1 female RJ-45
Gain	Unbalanced output: 0 dB; balanced output: +6 dB
Frequency response	20 Hz to 20 kHz, ±1 dB
THD + Noise	0.15% @ 1 kHz, 0.3% @ 20 kHz at nominal level
S/N	>70 dB at maximum output (unweighted)
Stereo channel separation	>60 dB @ 1 kHz
CMRR	>43 dB @ 20 Hz to 20 kHz

Audio input — PowerCage MTP T AV

Number/signal type	1 stereo, unbalanced
Connector	(1) 3.5 mm captive screw connector, 5 pole
Impedance	>10k ohms, unbalanced: >20k ohms, balanced: AC coupled
Nominal levels	+4 dBu (1.23 Vrms), -10 dBV (316 mVrms)
Maximum level	+18 dBu, (unbalanced) at 1% THD+N

NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

Audio output — PowerCage MTP R AV

Number/signal type	
MTP R AV	2 mono, balanced/unbalanced
Connector	(1) 3.5 mm captive screw connector, 5 pole
Impedance	50 ohms unbalanced, 100 ohms balanced
Gain error	±1 dB channel to channel
Nominal levels	+4 dBu (1.23 Vrms), -10 dBV (316 mVrms)
Maximum level	+18 dBu, unbalanced at 1% THD+N

General

Recommended cable type	Extron Enhanced Skew-Free™ A/V UTP cable, CAT 5/5e/6 (shielded or unshielded)
Power consumption	Each MTP board at 115 VAC, 60 Hz MTP T AV: 2.69 watts MTP R AV: 3.92 watts
Power input requirements	12 VDC, 1.0 A, supplied by the PowerCage enclosure
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	Boards: convection, within the PowerCage enclosure
Enclosure type	Metal
Enclosure dimensions	
Boards	Fits a single slot opening in a PowerCage enclosure.
Product weight	
Boards	0.8 lbs (0.4 kg)
Shipping weight	
Boards	2 lbs (1 kg) each
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	CE, c-UL, UL
EMI/EMC	CE, C-tick, FCC Class A, ICES, VCCI
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTES: All nominal levels are at ±10%.

Specifications are subject to change without notice.

Part Numbers

PowerCage MTP AV Part Numbers

The PowerCage MTP AV boards must be installed in a PowerCage 1600 enclosure.

PowerCage Enclosure and Boards	Part number
PowerCage MTP T AV	70-815-01
PowerCage MTP R AV	70-816-01

Included Parts

These items are included in each order for a PowerCage MTP T AV and MTP R AV:

Included parts	Part number
IEC power cord	
Tweeker (small screwdriver)	
Setup guide	
Captive screw 5-pole connectors (qty. 1)	100-457-01

Cables and Connectors

Accessory	Part number
Enhanced Skew Free™ A/V UTP cable	26-569-0*x*
Enhanced Skew-Free A/V cable, 1000 ft, non-plenum	22-141-03
Skew-Free UTP-P series, A/V cable, 75 ft (22.8m)	26-570-07
Enhanced Skew-Free A/V cable, 1000 ft (300m), plenum	22-142-03
CAT 6 Jack, black, Qty. 10	100-476-01
CAT 6 Jack, red, Qty. 10	100-477-01
CAT 6 Jack, blue, Qty. 10	100-478-01
CAT 6 Jack, orange, Qty. 10	100-479-01
CAT 6 Jack, gray, Qty. 10)	100-480-01
CAT 6 Jack, white, Qty. 10	100-481-01
CAT 6 Jack, ivory, Qty. 10	100-482-01
SVHSM-2BNCF, S-Video male to 2 BNC female adapter	26-353-01
SVHSM-BNCM, S-Video male to 2 BNC male adapter	26-353-02

Extron® Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America, and Central America:
Extron Electronics
1001 East Ball Road
Anaheim, CA 92805
U.S.A.

Japan:
Extron Electronics, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

Europe, Africa, and the Middle East:
Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:
Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Asia:
Extron Asia
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Middle East:
Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
United Arab Emirates, Dubai

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions, or modifications were made to the product that were not authorized by Extron.

NOTE: If a product is defective, please call Extron and ask for an Application Engineer to receive an RA (Return Authorization) number. This will begin the repair process.

USA: (714) 491-1500 **Europe**: +31.33.453.4040
Asia: +65.6383.4400 **Japan**: +81.3.3511.7655

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

Extron **USA - West** Headquarters	Extron **USA - East**	Extron **Europe**	Extron **Asia**	Extron **Japan**	Extron **China**	Extron **Middle East**
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